

CLAIMS:

1. A variable mirror (100;200;300;400;500;600;740;922) comprising:
- a fluid chamber (130;230);
- an optical axis (90) extending through at least a portion of the fluid chamber;
- a first polar and/or conductive fluid (110;210) and a second fluid (120;220) in
5 contact over an interface (140,140';240,240';340,340';440,440';540,540') extending
transverse the optical axis, the fluids being substantially immiscible;
- an interface adjuster (250;250';250'') arranged to alter the configuration of the
interface via the electrowetting effect; and
wherein the interface comprises a reflective material.

10

2. A mirror as claimed in claim 1, wherein the reflective material comprises a
metal.

15

3. A mirror as claimed in claim 1 or claim 2, wherein the reflective material
comprises a Metal Liquid – Like Film.

4. A mirror as claimed in any one of the above claims, wherein the reflective
material comprises a thin metal layer on an organic polymer film.

20

5. A mirror as claimed in any one of the above claims, wherein the interface
adjuster (250;250';250'') comprises:

- a first electrowetting electrode (252) in electrical contact with the first fluid
(110;210);
- at least one second electrowetting electrode (254,254a,254b; 255a,255b,255c,
255d, 255e) located adjacent the interface (140,140';240,240';340,340';440,440';540,540');
and
- a voltage source (256;256';256a;256b) for applying a voltage between said
first and second electrodes for altering the configuration of said interface.

6. A mirror as claimed in claim 5, wherein an edge of said interface (140,140';240,240';340,340';440,440') is constrained by the fluid chamber (130;230), and the second electrowetting electrode (254,254a,254b) is arranged to act on at least a portion of the interface edge.

5

7. A mirror as claimed in claim 5, wherein the second electrode (255a, 255b, 255c, 255d, 255e) is separated from the interface (540,540') by at least a portion of said second fluid (220).

10 8. An optical device (700;800;900) comprising a variable mirror as claimed in claim 1.

15 9. An optical device as claimed in claim 8, wherein the optical device comprises a laser cavity (800) including said variable mirror, the cavity further including a second mirror.

10. An optical device as claimed in claim 8, wherein said optical device comprises a Maksutov Cassegrain catadioptric system (700) comprising a primary mirror (740) and a secondary mirror (701), the primary mirror being formed by said variable mirror.

20

11. An optical device as claimed in claim 8, wherein the optical device comprises an optical scanning device (900) for scanning an optical record carrier.

12. A method of manufacturing a variable mirror (100;200;300; 25 400;500;600;740;922), the method comprising the steps of:
- providing a fluid chamber (130;230), with an optical axis (90) extending through at least a portion of the fluid chamber;
- providing a first polar and/or conductive fluid (110;210) and a second fluid (120;220) in contact over an interface (140,140';240,240';340,340'; 440,440';540,540') 30 extending transverse of the optical axis, the fluids being substantially immiscible, and the interface comprising a reflective material; and
- providing an interface adjuster (250;250';250'') arranged to alter the configuration of the interface via the electrowetting effect.

13. A method of operating an optical device (700;800;900), the optical device comprising a variable mirror as claimed in claim 1, the method comprising controllably altering the configuration of the interface (140,140';240, 240';340,340';440,440'; 540,540') so that the mirror provides the desired reflective properties.